DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Formatted: Indent: Left: 0 pt, First line: 0 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

2. Claims 1, 4, 10, 14, 16, 17, 20 , 22, 26, 27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Askeland et al (US 6,443,568) and Nagata et al (US 2002/0186292).

Regarding claims 1 and 17, Tomotake teaches a system and method for printing durable ink-jet ink images, comprising: a) offset media **(1, Fig 1)**; b) an aqueous ink-jet ink **(pg 3, par [0048])** comprising latex particulates **(pg 9, par [0129])** dispersed therein and including a pigment colorant, said ink-jet ink being configured to be ink-jetted onto the offset media; d) a calendaring device configured for applying pressure and heat to offset media once the ink-jet ink is ink-jetted thereon **(4, Fig 1)**.

Tomotake fails to teach c) a fixer composition including a crashing agent that is reactive with a component of the ink-jet ink, said fixer composition being configured to be overprinted or underprinted on the offset media with respect to the ink-jet ink; and, wherein the pressure is mechanical pressure applied at from 500 psi to 3000 psi, and wherein the heat to be applied is from 20°C to 90°C.

Askeland teaches a fixer composition including a crashing agent that is reactive with a component of the ink-jet ink, said fixer composition being configured to be overprinted or underprinted on the offset media with respect to the ink-jet ink **(column 3, lines 31-37 and 45-47)**. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method of Tomotake to include a fixer composition as taught by Askeland so produce more durable ink jet printed images which are less susceptible to smudging as stated in Askeland **(column 3, lines 47-49)**.

The combination of Tomotake and Askeland fails to teach wherein the pressure is mechanical pressure applied at from 500 psi to 3000 psi, and wherein the heat to be applied is from 20°C to 90°C. Nagata teaches a calendaring device capable of applying mechanical pressure from 500 psi to 3000 psi, and heat is from 20°C to 90°C **(pg 3, par [0034])**. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the system and method taught by Tomotake and Askeland such the calendaring device could apply mechanical pressure from 500 psi to 3000 psi,

and heat is from 20°C to 90°C to smooth the surface of the imaged layer as suggested by Nagata **(pg 2, par [0017])**.

Regarding claims 4 and 20, Tomotake teaches a system and method wherein the latex particulates are dispersed in the ink-jet ink at from 0.1 wt% to 15 wt% **(pg 9, par [0132])**.

Regarding claims 10 and 26, Tomotake as modified by Askeland, and Nagata teaches the system and method wherein the crashing agent is selected from the group consisting of cationic polymers, multivalent metal ions or ionic groups, acids, and combinations thereof **(Askeland column 3, lines 31-37 and 45-47)**.

Regarding claims 14 and 27, Tomotake teaches a system and method wherein the latex particulates comprise randomly polymerized copolymers, said latex particulates being predominantly from 20 nm to 500 nm in size and predominantly from 10,000 Mw to 2,000,000 Mw **(pg 9, par [0131])**.

Regarding claim 16, Tomotake teaches a system and method wherein the calendaring device includes a pair of rollers that are configured to apply pressure and heat to the offset media once the ink-jet ink is printed thereon **(4, Fig 1)**.

Regarding claim 22, Tomotake teaches a system and method wherein the pigment colorant is present in the ink-jet ink at from 0.5 wt% to 10 wt% **(pg 4, par [0063])**.

Regarding claim 29, Tomotake as modified by Askeland and Nagata teaches a method wherein the physical property is smoothness, wherein upon applying pressure, the printed image is modified from having a textured profile to a smoother profile **(Nagata pg 2, par [0017])**.

Regarding claim 30, Tomotake as modified by Askeland and Nagata teaches a method wherein the physical property is flow, wherein upon applying pressure, the printed image is temporarily modified from a more solid configuration to a more liquid configuration **(Nagata pg 2, par [0017])**.

3. Claims 3, 12, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Askeland et al (US 6,443,568) and Nagata et al (US 2002/0186292) as applied to claims 1, 10, and 17 above, and further in view of Doumaux (US 6,412935).

Regarding claims 3 and 19, Tomotake as modified by Askeland and Nagata teaches all the claimed elements except wherein the crashing agent is present in the fixer composition at from 0.1 wt% to 10 wt%. Doumaux teaches a crashing agent is present

in the fixer composition at from 0.1 wt% to 10 wt% **(column 4, lines 22-24)**. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake, Askeland and Nagata such that the crashing agent is present in the fixer composition at from 0.1 wt% to 10 wt% to provide the appropriate pH balance to the fixer fluid as suggested by Doumaux **(column 4, lines 3-5)**.

Regarding claim 12, Tomotake as modified by Askeland, Nagata and Doumaux teaches all the claimed elements except explicitly wherein the crashing agent is a multivalent metal ion or ionic group is provided by a member selected from the group consisting of multivalent metal nitrates, EDTA salts, phosphonium halide salts, organic acids, chloride salts, and combinations thereof **(Doumaux column 3, lines 65-67)**.

Regarding claim 13, Tomotake as modified by Askeland, Nagata and Doumaux teaches wherein the crashing agent is an acid selected from the group consisting of succinic acid, glycolic acid, citric acid, nitric acid, hydrochloric acid, phosphoric acid, sulfuric acid, polyacrylic acid, acetic acid, malonic acid, maleic acid, ascorbic acid, glutaric acid, fumaric acid, tartaric acid, lactic acid, nitrous acid, boric acid, carbonic acid, carboxylic acids such as formic acid, chloroacetic acid, dichloroacetic acid, trichloroacetic acid, fluoroacetic acid, trimethylacetic acid, methoxyacetic acid, mercaptoacetic acid, propionic acid, butyric acid, valeric acid, caprioc acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, rinolic acid, rinoleic acid,

cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, o-chlorobenzoic acid, m-chlorobenzoic acid, p-chlorobenzoic acid, o-bromobenzoic acid, m-bromobenzoic acid, p- bromobenzoic acid, o-nitrobenzoic acid, m-nitrobenzoic acid, p-nitrobenzoic acid, oxalic acid, adipic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, p-hydrobenzoic acid, anthranilic acid, m-aminobenzoic acid, p-aminobenzoic acid, benzenesulfonic acid, methylbenzenesulfonic acid, ethylbenzenesulfonic acid, dodecylbenzenesulfonic acid, 5- sulfosalicylic acid, 1-sulfonaphthalene, hexanesulfonic acid, octanesulfonic acid, dodecanesulfonic acid, amino acids such as glycine, alanine, valine, c~-aminobutyric acid, c~-aminobutryic acid, c~- alanine, taurine, serine, c~-amino-n-caprioc acid, leucine, norleucine, phenylalanine, and combinations thereof **(Doumaux column 4, lines 6-9)**.

4. Claims 5, 6, 15, 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Askeland et al (US 6,443,568) and Nagata et al (US 2002/0186292) as applied to claims 1 and 17 above, and further in view of Koike (US 2002/0192003).

Regarding claims 5 and 21, Tomotake as modified by Askeland and Nagata teaches all the claimed elements except an overcoat composition including a liquid vehicle having

latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink.

Koike teaches an overcoat composition including a liquid vehicle having latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink **(pg 6, par [0064])**. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake, Askeland and Nagata such that an overcoat composition including a liquid vehicle having latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink to improve the physical strength of the image receiving layer as suggested by Koike **(pg 6, par [0061])**.

Regarding claim 6, Tomotake as modified by Askeland, Nagata and Koike teaches the system and method wherein the latex particulates are present in the overcoat composition at from 0.1 wt% to 15 wt% **(Koike pg 6, par [0064])**.

Regarding claims 15 and 28, Tomotake as modified by Askeland, Nagata and Koike teaches the system and method wherein the latex particulates comprise randomly polymerized copolymers, said latex particulates being predominantly from 20 nm to 500 nm in size and predominantly from 10,000 Mw to 2,000,000 Mw **(Koike pg 6, par [0064])**.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Askeland et al (US 6,443,568) and Nagata et al (US 2002/0186292) as applied to claims 10 and 17 above, and further in view of Tsang (US 6,450,632).

Regarding claim 11, Tomotake as modified by Askeland and Nagata teaches all the claimed elements except explicitly wherein the crashing agent is a cationic polymer selected from the group consisting of polyvinylpyridines, polyalkylaminoethyl acrylates, polyalkylaminoethyl methacrylates, poly(vinyl imidazole), polyethyleneimines, polybiguanides, polyguanides, polyvinylamines, polyallylamines, polyacrylamines, polyacrylamides, polyquatemaryamines, cationic polyurathenes, aminecelluloses, polysacchride amines, and combinations thereof.

Tsang teaches a fixer fluid with polyethyleneimines as the crashing agent. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake, Askeland and Nagata such that such that the fixer fluid of included polyethyleneimines as the crashing agent as an obvious matter of design choice because polyethyleneimines is well known in the art as a crashing agent.

6. Claims 31 and 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Koike et al (US 2002/0192003) and Nagata et al (US 2002/0186292).

Regarding claim 31, Tomotake teaches a system and method for printing durable ink-jet ink images, comprising: a) offset media **(1, Fig 1)**; b) an aqueous ink-jet ink **(pg 3, par [0048])** comprising latex particulates **(pg 9, par [0129])** dispersed therein and including a pigment colorant, said ink-jet ink being configured to be ink-jetted onto the offset media; d) a calendaring device configured for applying pressure and heat to offset media once the ink-jet ink is ink-jetted thereon **(4, Fig 1)**.

Tomotake fails to teach c) an overcoat composition including a liquid vehicle having latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink, said latex particulates being present in the overcoat composition at from 0.1 wt% to 15 wt%; and, wherein the pressure is mechanical pressure applied at from 500 psi to 3000 psi, and wherein the heat to be applied is from 20°C to 90°C.

Koike teaches an overcoat composition including a liquid vehicle having latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink **(pg 6, par [0064])** and wherein the latex particulates are present in the overcoat composition at from 0.1 wt% to 15 wt% **(Koike**

pg 6, par [0064]). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake such that an overcoat composition including a liquid vehicle having latex particulates dispersed therein, said overcoat composition being configured to be overcoated with respect to the ink-jet ink to improve the physical strength of the image receiving layer as suggested by Koike **(pg 6, par [0061])**.

The combination of Tomotake and Koike fails to teach wherein the pressure is mechanical pressure applied at from 500 psi to 3000 psi, and wherein the heat to be applied is from 20°C to 90°C. Nagata teaches a calendaring device capable of applying mechanical pressure from 500 psi to 3000 psi, and heat is from 20°C to 90°C **(pg 3, par [0034])**. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the system and method taught by Tomotake and Askeland such the calendaring device could apply mechanical pressure from 500 psi to 3000 psi, and heat is from 20°C to 90°C to smooth the surface of the imaged layer as suggested by Nagata **(pg 2, par [0017])**.

Regarding claim 38, Tomotake teaches a system and method wherein the latex particulates are dispersed in the ink-jet ink at from 0.1 wt% to 15 wt% **(pg 9, par [0132])**.

Regarding claim 39, Tomotake teaches a system and method wherein the latex particulates comprise randomly polymerized copolymers, said latex particulates being

predominantly from 20 nm to 500 nm in size and predominantly from 10,000 Mw to 2,000,000 Mw **(pg 9, par [0131])**.

Regarding claim 40, Tomotake as modified by Koike and Nagata teaches the system and method wherein the latex particulates comprise randomly polymerized copolymers, said latex particulates being predominantly from 20 nm to 500 nm in size and predominantly from 10,000 Mw to 2,000,000 Mw **(Koike pg 6, par [0064])**.

Regarding claim 41, Tomotake teaches a system and method wherein the calendaring device includes a pair of rollers that are configured to apply pressure and heat to the offset media once the ink-jet ink is printed thereon **(4, Fig 1)**.

7. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Koike et al (US 2002/0192003 and Nagata et al (US 2002/0186292) as applied to claim 31 above, and further in view of Askeland et al (US 6,443,568).

Regarding claim 32, Tomotake as modified by Koike and Nagata teaches all the claimed elements except a fixer composition including a crashing agent that is reactive with a component of the ink-jet ink, said fixer composition being configured to be overprinted or underprinted on the offset media with respect to the ink-jet ink.

Askeland teaches a fixer composition including a crashing agent that is reactive with a component of the ink-jet ink, said fixer composition being configured to be overprinted or underprinted on the offset media with respect to the ink-jet ink **(column 3, lines 31-37 and 45-47)**. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method of Tomotake to include a fixer composition as taught by Askeland so produce more durable ink jet printed images which are less susceptible to smudging as stated in Askeland **(column 3, lines 47-49)**.

8. Claims 33, 34, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Koike et al (US 2002/0192003), Nagata et al (US 2002/0186292) and Askeland et al (US 6,443,568) as applied to claim 32 above, and further in view of Doumaux (US 6,412935).

Regarding claim 33, Tomotake as modified by Koike, Nagata and Askeland teaches all the claimed elements except wherein the crashing agent is present in the fixer composition at from 0.1 wt% to 10 wt%. Doumaux teaches a crashing agent is present in the fixer composition at from 0.1 wt% to 10 wt% **(column 4, lines 22-24)**. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake, Koike, Nagata and Askeland such that the crashing agent is present in the fixer composition at from 0.1 wt% to 10 wt% to provide the appropriate pH balance to the fixer fluid as suggested by Doumaux **(column 4, lines 3-5)**.

Regarding claim 34, Tomotake as modified by Koike, Nagata and Askeland and Doumaux teaches the system and method wherein the crashing agent is selected from the group consisting of cationic polymers, multivalent metal ions or ionic groups, acids, and combinations thereof **(Askeland column 3, lines 31-37 and 45-47)**.

Regarding claim 36, Tomotake as modified by Koike, Nagata and Askeland and Doumaux teaches all the claimed elements except explicitly wherein the crashing agent is a multivalent metal ion or ionic group is provided by a member selected from the group consisting of multivalent metal nitrates, EDTA salts, phosphonium halide salts, organic acids, chloride salts, and combinations thereof **(Doumaux column 3, lines 65-67)**.

Regarding claim 37, Tomotake as modified by Koike, Nagata and Askeland and Doumaux teaches wherein the crashing agent is an acid selected from the group consisting of succinic acid, glycolic acid, citric acid, nitric acid, hydrochloric acid, phosphoric acid, sulfuric acid, polyacrylic acid, acetic acid, malonic acid, maleic acid, ascorbic acid, glutaric acid, fumaric acid, tartaric acid, lactic acid, nitrous acid, boric acid, carbonic acid, carboxylic acids such as formic acid, chloroacetic acid, dichloroacetic acid, trichloroacetic acid, fluoroacetic acid, trimethylacetic acid, methoxyacetic acid, mercaptoacetic acid, propionic acid, butyric acid, valeric acid, caprioc acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic

acid, oleic acid, rinolic acid, rinoleic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, o-toluic acid, m-toluic acid, p-toluic acid, o-chlorobenzoic acid, m-chlorobenzoic acid, p-chlorobenzoic acid, o-bromobenzoic acid, m-bromobenzoic acid, p- bromobenzoic acid, o-nitrobenzoic acid, m-nitrobenzoic acid, p-nitrobenzoic acid, oxalic acid, adipic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, p-hydrobenzoic acid, anthranilic acid, m-aminobenzoic acid, p-aminobenzoic acid, benzenesulfonic acid, methylbenzenesulfonic acid, ethylbenzenesulfonic acid, dodecylbenzenesulfonic acid, 5- sulfosalicylic acid, 1-sulfonaphthalene, hexanesulfonic acid, octanesulfonic acid, dodecanesulfonic acid, amino acids such as glycine, alanine, valine, c~-aminobutyric acid, c~-aminobutryic acid, c~- alanine, taurine, serine, c~-amino-n-caprioc acid, leucine, norleucine, phenylalanine, and combinations thereof **(Doumaux column 4, lines 6-9)**.

9. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotake et al (US 2003/0169320) in view of Koike et al (US 2002/0192003), Nagata et al (US 2002/0186292) and Askeland et al (US 6,443,568) as applied to claim 32 above, and further in view of Tsang (US 6,450,632).

Regarding claim 35, Tomotake as modified by Koike, Nagata and Askeland teaches all the claimed elements except explicitly wherein the crashing agent is a cationic polymer selected from the group consisting of polyvinylpyridines, polyalkylaminoethyl acrylates, polyalkylaminoethyl methacrylates, poly(vinyl imidazole), polyethyleneimines,

polybiguanides, polyguanides, polyvinylamines, polyallylamines, polyacrylamines, polyacrylamides, polyquatemaryamines, cationic polyurathenes, aminecelluloses, polysacchride amines, and combinations thereof.

Tsang teaches a fixer fluid with polyethyleneimines as the crashing agent. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and method taught by Tomotake as modified to include polyethyleneimines as the crashing agent as a matter of design choice because polyethyleneimines is well known in the art as a crashing agent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHEMA T. FREEMAN whose telephone number is (571)270-5714. The examiner can normally be reached on Monday-Thursday 7:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. T. F./
Examiner, Art Unit 2854

/Judy Nguyen/
Supervisory Patent Examiner, Art Unit 2854